

Factors Affecting Hand Hygiene Adherence at a Private Hospital in Turkey

Türkiye'de Özel Bir Hastanede El Hijyeni Uyumunu Etkileyen Faktörler

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Abstract

Objective: Nosocomial infections are the main problems rising morbidity and mortality in health care settings. Hand hygiene is the most effective method for preventing these infections. In this study, we aimed to investigate the factors related with hand hygiene adherence at a private hospital in Turkey.

Materials and Methods: This study was conducted between March and June 2010 at a private hospital in Turkey. During the observation period, employees were informed about training, then posters and images were hanged in specific places of the hospital. After the initial observation, training on nosocomial infections and hand hygiene was provided to the hospital staff in March 2010. Contacts were classified according to occupational groups and whether invasive or not. These observations were evaluated in terms of compatibility with hand hygiene guidelines.

Results: Hand hygiene adherence rate of trained doctors was higher than untrained ones before patient contact and after environment contact [48% (35/73) versus 82% (92/113) $p<0.05$ and 23% (5/22) versus 76% (37/49) $p<0.05$ respectively]. Hand hygiene adherence rate of trained nurses was higher than untrained ones before patient contact [63% (50/79) versus 76% (37/49) $p<0.05$]. Hand hygiene adherence rate of trained assistant health personnel was higher than untrained ones before asepsis [20% (2/10) versus 73% (16/22) $p<0.05$]. In addition, it was seen that hand antiseptics were used when hand washing was not possible.

Conclusion: The increase at the rate of hand washing after training reveals the importance of feedback of the observations, as well as the training. One of the most important ways of preventing nosocomial infections is hand hygiene training that should be continued with feedbacks.

Keywords: Hand hygiene adherence, observation, training, feedback

Özet

Amaç: Hastane enfeksiyonları sağlık kurumlarında morbidite ve mortaliteyi arttıran başlıca sorunlardır. El hijyeni bu enfeksiyonları önlemede en etkili yöntemdir. Bu çalışmada, Türkiye'de özel bir hastanede el hijyenine uyum ile ilişkili faktörlerin araştırılması amaçlanmıştır.

Gereç ve Yöntem: Bu çalışma, Türkiye'de özel bir hastanede Mart 2010-Haziran 2010 tarihleri arasında gerçekleştirilmiştir. Gözlem süresince, çalışanlara eğitim hakkında bilgi verildi; ardından hastanede belirli yerlere posterler ve resimler asıldı. İlk gözlem sonrası, hastane enfeksiyonları ve el hijyeni konusunda Mart 2010'da hastane personeline eğitim verildi. Temaslar, meslek gruplarına ve invaziv olup olmamasına göre sınıflandırıldı. Bu gözlemler, el hijyeni klavuzlarına uyumluluk açısından değerlendirildi.

Bulgular: Eğitim alan doktorlarda hasta ile temas öncesi ve çevre ile temas sonrası el hijyeni uyum oranı eğitim almayanlara göre daha yüksekti [%48 (35/73)'e karşı %82 (92/113) $p<0,05$ ve %23 (5/22)'e karşı %76 (37/49) $p<0,05$ sırasıyla]. Eğitim alan hemşirelerde hasta ile temas öncesi uyum oranı eğitim almayanlara göre daha yüksekti [%63 (50/79)'e karşı %76 (37/49) $p<0,05$]. Eğitim alan yardımcı sağlık personeline asepsi öncesi uyum oranı eğitim almayanlara göre daha yüksekti [%20 (2/10)'ye karşı %73 (16/22) $p<0,05$]. Ayrıca, el yıkamanın mümkün olmadığı koşullarda el antiseptiği kullanıldığı görülmüştür.

Sonuç: Eğitim sonrası el yıkama oranlarındaki artış gözlemlerin geribildirimini yanı sıra, eğitimin önemini ortaya koymaktadır. Hastane enfeksiyonlarını önlemede en önemli yollardan biri geribildirimler ile sürdürülmesi gereken el hijyeni eğitimidir.

Anahtar Kelimeler: El hijyeni uyumu, gözlem, eğitim, geri bildirim

Introduction

Nosocomial infections are amongst the very important health care associated problems in daily hospital practice.

These infections lead to an increase in morbidity and mortality, treatment outcomes, length of hospital stay and the loss of labour force both in Turkey and around the world [1, 2].

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Currently, numerous methods are used for the prevention and control of hospital-acquired infections such as cleaning, disinfection, sterilization, asepsis, hand hygiene, surveillance, patient isolation and epidemiological methods. However, proper hand washing is a very easy, economical and effective method for the prevention of community and hospital-acquired infections, since it breaks the way of cross-contamination of the agents. In this regard, standard measures set by national and international organizations confirm that hand washing is the single most important procedure in the prevention of infection [2-7].

Despite all the information and training given, it was observed that during the past 30 years, almost half of the health care workers failed to comply with hand hygiene recommendations [8].

Even the methods, study groups, and the departments studied are different, adherence to hand hygiene is known to be universally low [9, 10].

According to occupational evaluation, physicians exhibit the least adherence to hand hygiene, whereas nurses constitute the group with the highest adherence [1, 11].

In a multicentre study on hand hygiene adherence including 60,055 observations, the rate of adherence was 55.8% in nurses, 52.8% in physicians, 53.9% in invasive contact and 50% in surface contact. In another study conducted in the U.S., the habit of washing hands before the contact with patients was observed as 30%, and it was revealed that 15-45% of the physicians and 25-45% of the nurses wash their hands after contact [1, 12, 13].

Hand hygiene adherence must be increased in order to reduce the hospital-acquired infections. It is extremely important to monitor the reasons of non-adherence in health care institutions and perform multidisciplinary, long-term, effective campaigns, also develop strategies that should be supported by hospital management increasing the hand hygiene adherence of hospital staff. The management should provide hand hygiene training to the health workers before the inauguration, and continuity of the training should be ensured. Feedback, ease of hand hygiene practice, patient education, reminders in work place, support and simplification of hand care of health care workers, ensuring active participation at individual and also institutional level, prevention of crowded environments, excessive workload and lack of staff, providing alcohol-based agents, administrative sanctions and reward will increase the hand hygiene adherence and thereby will decrease hospital-acquired infections [6-8, 12, 13].

Hand hygiene adherence of physicians was generally found to be low according to recent studies conducted in Turkey [4]. However, these studies were generally conducted in training and university hospitals. We could not find enough data on hand hygiene adherence in the ever-increasing private hospi-

tals in Turkey. Accordingly, this study aims to investigate hand hygiene adherence in a 50-bed private hospital in Turkey.

Materials and Methods

This study was conducted between March and June 2010 at a private hospital in Turkey. The study hospital has a capacity of 50 beds, 179 hospital staffs, 41 physicians, 114 nurses, and 35 assistant health personnel (AHP). Approximately, 15 operations are performed daily and it has two intensive care units (four-bed adult intensive care unit and neonatal intensive care unit with seven incubators).

At the beginning of the observation period, baseline adherence of the participants to hand hygiene parameters was measured and recorded. Thereafter, training on nosocomial infections and hand hygiene was provided to the hospital staff in March 2010 in the hospital's conference room by infectious disease specialist and infection control nurse. In the context of training there were issues regarding the term microbe, transmission ways of hospital infection agents, the role of hands in the transmission, in which conditions hands must be washed and the method of hand washing. These issues were told to the participants with presentation. Participants were informed that they will be supervised.

Then, posters and images were hanged in specific places of the hospital (all of the clinics, hospital entry, emergency room, intensive care units, entrance, etc.). During the observation period, adherence of the participants to hand hygiene parameters was again measured and recorded. At the end of the study, all of the employees and authorized personnel of units were feed-backed about the observation results.

Contacts were classified according to occupational groups and whether invasive or not. Observations were done before and after the patient contact, before aseptic procedures, after contact with body fluids and taking off the gloves and after contact with patients' surroundings based on the occupations. These observations were evaluated in terms of compatibility with hand hygiene guidelines [14]. In the observed contacts, hand washing or use of an antiseptic was considered as adherence, while failure of hand washing or use of hand antiseptic was considered as non-adherence.

Statistical Analysis

For the descriptive statistics of the data, frequency and rate values were used. Distribution of the variables was measured with kolmogorov smirnov test. For the analysis of the quantitative data, Mann-Whitney U test was used. For the analysis of repetitive measurements, wilcoxon was used. For the analysis of the qualitative data chi-square test was used. SPSS 22.0 programme was used for the analysis.

Results

In this study, hand hygiene adherence rates of trained doctors was higher than untrained ones before patient contact and after environment contact [48% (35/73) versus 82% (92/113) $p<0.05$ and 23% (5/22) versus 76% (37/49) $p<0.05$ respectively]. Hand hygiene adherence rate of trained nurses was higher than untrained ones before patient contact [63% (50/79) versus 76% (37/49) $p<0.05$]. Hand hygiene adherence rate of trained AHP was higher than untrained ones before asepsis [20% (2/10) versus 73% (16/22) $p<0.05$]. In addition, it was seen that hand antiseptics were used when hand washing was not possible. Hand hygiene adherence rates before and after the training was shown in the Table.

Discussion

Hand washing is the most important and standard measure with proven efficacy in the prevention of hospital infections. Cross-contamination of nosocomial infectious agents among patients is often spread through the hands of health care workers. The purpose of hand washing is to remove visible dirt from the hands, as well as removing transient flora and decreasing the amount of resident flora. Although it should be performed by all health care workers as a routine procedure, all studies conducted on this issue showed that hand hygiene adherence of health care personnel is insufficient [4, 15].

In this study, it was shown that hand hygiene adherence of doctors before patient contact could be improved significantly by training. We commented that hand hygiene awareness could be achieved by doctors easily. In most studies, hand hygiene adherence of doctors before patient contact was shown to be low [16]. In a similar study, the increase in doctors' hand hygiene adherence by training was more evident compared to other medical personnel [17]. Education level of doctors before starting occupation may have a role in their adoption of the application. Trained doctors may become more adherent for this reason.

When the reasons of non-adherence to hand hygiene were investigated, it was found that factors affecting the adherence were: lack of training and experience, being a physician (compared to nurses), being a male (compared to females), insisting on non-adherence, lack of feedback on inadequate training or performance, working in intensive care unit (excessive workload), lack of staff, lack of role model, the use of gloves, forgetting or being unable to remember, lack of knowledge on the importance of hand hygiene in reducing the rate of hospital infections, lack of tradition and habit in ensuring hand hygiene adherence, being not able to take the time for it, lack of hand hygiene award at individual and institutional level, lack of priority given to hand hygiene in the

Table. Hand hygiene adherence rates before and after training

	Before training	After training	p
Doctor			
Before patient contact	48% (35/73)	82% (92/113)	0.000
After patient contact	72% (17/26)	78% (114/148)	0.306
After body fluid contact	88% (28/32)	98% (60/75)	0.514
Before asepsis	65% (18/28)	83% (43/52)	0.117
After environment contact	23% (5/22)	76% (37/49)	0.000
Nurse			
Before patient contact	63% (50/79)	76% (37/49)	0.001
After patient contact	91% (68/75)	84% (47/56)	0.370
After body fluid contact	100% (44/44)	100% (47/47)	1.000
Before asepsis	76% (34/45)	94% (28/30)	0.370
After environment contact	75% (20/27)	70% (18/26)	0.931
Assistant Health Personnel			
Before patient contact	26% (11/42)	37% (12/33)	0.486
After patient contact	70% (33/47)	67% (22/33)	0.927
After body fluid contact	91% (21/23)	90% (33/37)	0.859
Before asepsis	20% (2/10)	73% (16/22)	0.016
After environment contact	54% (17/32)	65% (26/40)	0.436
chi-square test			

institution, lack of sanctions or rewards, lack of institutional environment of trust, lack of institutional written guidelines, as well as health care workers not aware of hand hygiene guidelines, their ignorance on the spreading of microorganisms [1, 6, 7, 15].

In studies related to hand washing habits, it was found that 79% of the physicians and 63% of the nurses did not wash their hands when necessary. Adherence to hand cleaning rules was found as low as 5.3% (5.5% in surface procedures, 4.8% in invasive procedures) [4].

In a hand hygiene observational study conducted in Turkey in 2009, the hand hygiene adherence rates before patient contact was 35% in physicians, 50% in nurses, 57% in AHPs, and after patient contact it was 39% in physicians, 50% in nurses, 30% in AHPs; and after contact with inanimate surface, the rate was 14% in physicians, 31% in nurses, 16% in AHPs; and before catheter care, it was 44% in physicians, 42% in nurses, whereas after catheter care this rate was 27% in physicians, 49% in nurses; and after taking off the gloves, the rate was 30% in physicians, 44% in nurses, and 25% in AHP [4].

In a study including 163 physicians and 573 activities associated with patient care, hand hygiene adherence was found to be 57%. The rate of physicians thinking hand hygiene practice as necessary after taking off the gloves was 30%. After the training and feedback, the rate of hand hygiene adherence before patient contact raised from 35% to 55% [13].

In another study, frequency of hand washing was found as 40% in 298 events that required hand washing. The habit of hand washing was found as 28% in physicians, 48% in nurses, and 42% in AHPs. For hand washing, the rate of antiseptic solution use at patient bedside was 45%, and the rate of sink and soap use was 55% [18].

In a study on the use of gloves and hand washing practices of nurses, the rate of nurses who wash their hands after taking off the gloves was found as 30%. It was observed in the study participants that 60% of the nurses did not wash their hands after taking off the gloves [19].

Although hand washing rates may vary in many of the studies, the identical point of all the studies is the fact that hand washing rates are lower than expected in health professionals, physicians in particular [4]. In our study, hand hygiene adherence rates were evaluated before and after the training. A significant increase was observed at the rates of hand hygiene adherence after the training.

All new staff in our institution received an orientation training on hand hygiene. In addition to this, sinks, paper towels and hand antiseptics are readily available in all parts of the hospital. The difference observed in hand washing rate before and after training reveals the importance of feedback on the observations, as well as the training. Furthermore, an increase in hand antiseptic use was also observed when hand washing was not possible. The most important point in the prevention of hospital acquired infections is the training to be provided on hand hygiene and to afford continuity with feedbacks [4, 20-23].

Ethics Committee Approval: Ethics committee approval was obtained.

Informed Consent: Written informed consent was obtained from patient/patients who participated in this study.

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References

- Öztürk Engin D, İnan Şengöz A. Hand hygiene. Haydarpaşa Numune Training Research Hospital Med J 2008.
- Türkiyede Hastane İnfeksiyonlarına Bakış Açısı ve Hastane Yönetimine Düşen Yasal Görevler. <http://www.das.org.tr/dosya/kongre/kong2005/48-05.pdf>. Date last updated: August 24 2010. Date last accessed: August 24 2010.
- Aksoy S, Atasoy A, Kırılmaz H. Application of multiple modelled hand hygiene development strategy in hand hygiene programme. The second international congress of performance and quality in health 2010.
- Arda B, Arsu G, Sipahi OR, Şenol Ş, Taşbakan IM, Yamazhan T. Evaluation of adherence to hand cleaning rules in intensive care units of Ege University Medical Faculty. *Turkish J Intensive Care Med* 2005; 5: 182-6.
- Çetinkaya F, Koç N, Macar M, Ünala D. Informations and applications of physician candidates in infection prevention. *J Turkish Society Microbiology* 1999; 30: 60-4.
- Gencer S. Prevention of hospital infections and the must of control: Hand washing. *Hospital Infections Prevention and Control Symposium Series* 2008; 60: 71-8.
- Hand hygiene guide. <http://www.rshm.gov.tr/enfeksiyon/dosya/elhijyenikilavuz.pdf>. Date last updated: July 28 2010. Date last accessed: July 28 2010.
- Personnel health control studies and training strategies at prevention of hospital infections. www.das.org.tr/dosya/kongre/kong2005/45-05.pdf Date last updated: July 20 2010. Date last accessed: July 20 2010.
- Sakihama T, Honda H, Saint S, et al. Hand hygiene adherence among health care workers at Japanese hospitals: a multicenter observational study in Japan. *J Patient Saf* 2014.
- Novoa AM, Pi-Sunyer T, Sala M, Molins E, Castells X. Evaluation of hand hygiene adherence in a tertiary hospital. *Am J Infect Control* 2007; 35: 676-83.
- Akyıl R, Uzun Ö. Determination of hand washing status of nurses working in hospital. published high license thesis. Atatürk University Nursing High School J 2007; 10: 2.
- http://www.performans.saglik.gov.tr/content/files/hastaguvencilik/saglik_hizmetlerinde_el_hijyeni_konulu_dso_kilavuzu.pdf Date last updated: July 28 2010. Date last accessed: July 28 2010.
- http://www.rshm.gov.tr/enfeksiyon/egitim/rahmet_caylan_el_hijyeni.pdf Date last updated: July 20 2010. Date last accessed: July 20 2010.

14. WHO guidelines on hand hygiene in health care. World Health Organization 2009.
15. Arman D. Hand washing and hand disinfection. In: Doğanay M, Ünal S, editors. Hospital Infections. Ankara: Scientific Medical Publishing; 2003. p. 91.
16. Karaaslan A, Kepenekli Kadayıfci E, Atıcı S, et al. Compliance of healthcare workers with hand hygiene practices in neonatal and pediatric intensive care units: overt observation. *Interdiscip Perspect Infect Dis* 2014; 2014: 306478.
17. Lee SS, Park SJ, Chung MJ, et al. Improved hand hygiene compliance is associated with the change of perception toward hand hygiene among medical personnel. *Infect Chemother* 2014; 46: 165-71.
18. Elker D, Kaynaroglu V, Yorgancı K. Hand washing habits of health personnel in a surgical intensive care unit. *Turk J Intensive Care Med* 2002; 2: 358-63.
19. Tel H. Investigation of hand glove use and hand washing applications of nurses in a university hospital. *Research Atatürk University Nursing High School J* 2009; 12: 4.
20. Acıbadem Bursa hospital hand washing campaign experience. www.das.org.tr/kongre2009/pdf/bildiri/459-46 Date last updated: August 25 2010. Date last accessed: August 28 2010.
21. Mahfouz AA, El Gamal MN, Al-Azraqi TA. Hand hygiene non-compliance among intensive care unit health care workers in Aseer Central Hospital, south-western Saudi Arabia. *Int J Infect Dis* 2013; 17: e729-32.
22. Trick WE, Vernon MO, Welbel SF, et al. Multicenter intervention program to increase adherence to hand hygiene recommendations and glove use and to reduce the incidence of antimicrobial resistance. *Infect Control Hosp Epidemiol* 2007; 28: 42-9.
23. Rosenthal VD, Guzman S, Safdar N. Reduction in nosocomial infection with improved hand hygiene in intensive care units of a tertiary care hospital in Argentina. *Am J Infect Control* 2005; 33: 392-7.